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Social Behavior of Children

By  
Barbara Merrill Bishop

Edited by Herbert S. Conrad

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# Psychological Monographs: General and Applied

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# Psychological Monographs:

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HERBERT S. CONRAD, *Editor*

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## Mother-Child Interaction and the Social Behavior of Children

By

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BARBARA MERRILL BISHOP

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## CHAPTER I

### INTRODUCTION

THE pattern of personality development in the young child is established primarily within the framework of his relationship with the parents. During the child's earliest years the parents constitute the chief social influence which the child experiences. The techniques which the parents employ in their treatment of the child, i.e., the incentives they offer, the frustrations they impose, their methods of control, together with the character of their general attitudes toward him serve as formative forces on the child's behavior. Habit patterns are forged as the child assimilates and internalizes these learning experiences, which interact with, and are conditioned by, his biological individuality. Later, the determining nature of parental roles is supplemented by forces from other parts of the environment. Nevertheless, all through the dependent years, the particular quality of the parent-child interaction is a significant factor in the establishment of permanent motivational and personality attributes.

In order to understand fully the relationship which exists between parent and child, it is essential that a consistent systematic conception of the processes by which parent and child interact be formulated. The theory of stimulus-response learning offers one line of approach to the development of a systematic method of study. According to this theory the parent is viewed as the social person who provides rewards, punishments, incentives, frustrations, and methods of directing the instrumental activity of the child. The child, consequently, learns certain ways of react-

ing to his parents and, in part by a process of stimulus generalization, these behavioral patterns are incorporated into his relationships with other individuals and form the nucleus of his general personality.

Two methodological requirements are implicit in the study of child behavior within this conceptual framework. The behavior of the parent in its stimulus aspects must be measured, as well as the child's behavior as a response to parental stimulation. This dichotomy, however, becomes blurred in actual interpersonal relationships where each individual is presenting both stimulus and response types of behavior which may operate together in such an intimately interactive manner as to defy unqualified distinction. In the case of a mother and child, the mother's behavior represents not only a stimulus source for the child's behavior, but also an object for stimulation on the part of the child; similarly, a mother's response to stimulation may at the same time carry the stimulus properties necessary to produce further instrumental activity on the part of the child. It is in the intricacies and complexities of this stimulus-response aspect of interpersonal relationships that the nature and effects of certain types of behavior on the part of a parent can be discovered. Such an approach offers a methodological foundation for the systematic evaluation of behavior and for the application of laws of learning to the study of interactive processes.

Various techniques have been utilized by investigators in their attempts to measure parental behavior as the



stimulus conditions for the child's behavior. These techniques fall into four main classifications: (a) rating scales (foremost among these are those developed by Champney [2]), (b) questionnaires, (c) interviews, and (d) case histories. Such methods are subject to criticism. All of them provide an inadequate frame of reference for absolute measurement, thus restricting reliable comparisons among groups outside the sample studied by any one investigator. In the case of methods *b*, *c*, and *d*, there is the additional factor of erroneous and selective recall. The rating scale method involves the distorting factor of the experimenter's presence as a variable of undetermined significance.

There is a further method, that of direct observation, by which parent-child relationships may be studied. Although many investigators have employed this technique in the home, there has been little attempt heretofore to observe the parent-child relationship under controlled experimental conditions. A previous study by the writer (6) used this latter method; it was found possible to categorize and to observe reliably a mother's behavior with her child in terms of her facilitative and inhibitory behavior, methods of control, and types of response. A sufficiently large variability among individuals was discovered to suggest that such stimulus and response differences could be related to differences in similar aspects of the child's behavior.

The present investigation represents an

extension of that study. The general conditions of the experiment were the same, consisting of the direct observation of a mother and her child when they were left alone in a playroom for two half-hour periods. The series of categories was expanded to include a description of the child's behavior as well as that of the mother, and the system of recording was further refined to cover qualitative differences in behavior types. A running record of both the mother's and the child's behavior was made in terms of a five-second time interval. The experiment was so arranged as to reduce to a minimum consciousness on the part of the mother that her behavior was actually being noted.

In order to investigate generalization of child behavior from that evidenced with the mother to that shown in social situations with other adults, each child was also tested for two thirty-minute sessions, under the same experimental conditions, with a young woman who was socially unfamiliar to him and who has been termed the "neutral adult."

This experimental design allowed the experimenter to investigate three main problems: (a) possible correlations existing between mother and child behavior, (b) indications of stimulus generalization on the part of the child, and (c) individual differences among mothers and children. A fourth problem studied was that of the consistency of mother-child behavior as an indication of the validity of the observed relationship.

## CHAPTER II

### EXPERIMENTAL CONDITIONS

#### A. SUBJECTS

THE subjects for the experiment were 34 mothers, together with their children (17 boys, 17 girls), who attended the Preschool Laboratories of the Iowa Child Welfare Research Station. Ages of the children ranged from 3 years 4 months to 5 years 7 months. All the children in the First, Second, and Third preschool groups were used in this study if they met the following criteria: (a) chronological age at least 3 years, (b) mother available for the experiments, and (c) non-participation in the previous experiment of the writer.

All the mothers came from the upper socioeconomic brackets and, generally speaking, could be considered more familiar with modern principles of child training than a group taken from an unselected population would be.

#### B. PROCEDURE

Each child was tested for four half-hour sessions on different days. Two sessions were with his mother, and two were with the neutral adult. In order to control any factors associated with the order in which the child was tested with the adults, the 34 children were divided into two groups matched for age and sex. For one group of children the order of testing was two sessions with the mother, two sessions with the neutral adult; for the other group the order was reversed.

The experimental room contained (a) an adult's straight chair beside a large table with magazines on it, (b) a low, square tank filled with water, sand, and floating toys, (c) red and green building blocks of various sizes, (d) three small dolls representing a mother, a preschool child, and a baby, (e) assorted wood and a

hammer and nails, (f) a small table with a child's tea set and a telephone on it, and (g) two small chairs.

The play sessions were observed by the experimenter from an observation booth fitted with a one-way screen. The behavior both of the adult and of the child was recorded every five seconds in terms of the notational system described later. Timing was provided by a device that flashed a light beside the record sheet every five seconds.

The following letter was sent by Dr. Ruth Updegraff, Supervisor of the Preschool, to each mother previous to the date on which the experimenter phoned her for an appointment:

DEAR MRS. —

Miss Merrill, one of our research assistants, is observing the play of young children under varying conditions. In the Preschool Laboratories we have the opportunity to observe children playing under fairly free conditions when supervised by teachers, but we have little opportunity to observe samples of children's play when supervised by mothers or older brothers or sisters, for example.

Since it is difficult to arrange for observations at home or in the neighborhood, we would like to secure observations in the preschool building, while children are supervised by parents. We have special facilities for this at 9 E. Market Street.

Miss Merrill will be calling you in the near future, hoping to make an appointment with you.

When the mother arrived she was shown the experimental room and told that the purpose of the study was to investigate play behavior of children when adults are present. The experimenter explained that she would observe the child's play from behind the one-way screen and that the mother was free to do as she wished during the period. It was agreed that the experimenter would knock on the door of the experimental room at the end of the half-hour. The mother was then asked to bring her child from the preschool, explaining briefly to him that they were going to play together. When the mother returned for her second session she was informed that the same procedure would be repeated.

The explanatory letter and the orienting remarks of the experimenter were accepted by the majority of mothers without further questioning. Any inquiries concerning how the mother should behave were answered by the reiteration that there were no explicit directions for her, and

by the suggestion that she imagine the session as a half-hour in her own home, during which she was unoccupied by household duties and was free to be in the same room with her child.

The experimental conditions under which the children were tested with the neutral adult were the same. The neutral adult brought the child from preschool, telling him that they were to "play games together," and returned him to his school group when the signal for the end of the thirty minutes was given. In order to guarantee that the play experience be as constant as possible from child to child, the neutral adult was given a frequency range of the main behavior categories within which her behavior toward all the children should fall. The consistency of her behavior will be discussed in a later section.

The time interval between the two sessions with the neutral adult fell within two weeks for all subjects. With two minor exceptions the two sessions with the mother were also conducted within a two-week interval. The time span of all four sessions for the children was four weeks, with the exception of five cases in which illness or other circumstances in the home produced a slightly longer time lapse between first and fourth session.

### C. BEHAVIOR CATEGORIES

A system of scoring was evolved in which the behavior of both the adult and child could be simultaneously recorded in terms of a five-second time interval. The systematic basis for the selection of the behavior categories and a description of the scoring procedure will be discussed in the following sections.

#### 1. *Categories Descriptive of Adult Behavior*

The categories used to characterize the behavior of both the mother and the neutral adult in this experiment were the same, in broad outline, as those employed by the writer in her previous study. The categories had originally been selected partly on theoretical and partly on empirical grounds. From a theoretical standpoint it was desired to have categories which would reflect accurately the different amounts and kinds of influence

the adult's behavior had on the child, i.e., the stimulus properties of her behavior. From an empirical standpoint it was necessary to select categories that were clearly definable, easily recognized in the intricacies of social interaction, and sufficiently comprehensive to express all possible behavior incidents that would appear during the play session.

In this study a rating scale was added to several of the behavior categories in order to differentiate the manner, purpose, and emotional factors characterizing the overt behavior. Everyday social contacts readily confirm the fact that a given behavior pattern can supply highly divergent stimulus cues to other individuals on the basis of these more subjective factors which particularize the behavior. For example, criticism can be offered in an understanding and constructive way, or it can be delivered in a manner calculated to reduce to a minimum the self-esteem of the recipient. Although the difficulty in recognizing and correctly interpreting these frequently subtle concomitants of social behavior was granted, it was felt that the ratings would facilitate further differentiation of stimulus-response interrelationships.

The complete list of adult categories is given in Table 1, together with the notational symbols (used in recording) and the definitions.

A running description of behavior couched in these terms reveals various quantitative as well as qualitative characteristics. First, the *degree of contact* between adult and child is expressed by the frequency of category *o*, which represents relative noncontact. All other categories, with the exception of the instances in which non-co-operation with the child's demands is expressed by ignoring, designate some degree of overtly

stimulating contact with the child.

Second, the *degree of specificity of control* of the child's behavior by the mother is indicated. An important aspect of adult stimulation of a child is the directing or influencing of instrumental activity. The child has a relatively small repertory of activities that he can utilize for securing gratification from the material and social environment. Nor are the stimulus conditions for eliciting the existent modes of behavior as unlimited as is the case with older persons. The instigation to activity which the adult provides often serves, therefore, either to stimulate a child to perform actions already established in his habit hierarchy, or to give him a model and, in effect, provide him with new instrumental activities to add to his repertory. Adult behavior can vary considerably in the degree to which specific actions are stimulated; the child, consequently, has different degrees of opportunity to develop potentialities for responding to many stimulus situations with many alternative actions. The greater the specificity of stimulation, the less are the child's capacities for self-initiated action encouraged.

At the extreme of the continuum would be directing the child's behavior by clear-cut demands or statements (*d*), and interfering with the continuation of the child's activity (*i*). Also specific in the degree of control of behavior is the giving of information to the child (*t*), helping him (*h*), and praising (*m*) or criticizing (*n*) him.

A somewhat lesser degree of specificity is characterized by behavior, defined as structurizing (*s*), which influences the child's behavior by indirect or unimposing methods. Degree of control is still further differentiated within this category. A relatively higher degree is repre-

sented by stimulation expressed as a suggestion, the responsibility for the response to be made being delegated to the child. An even less direct type describes the presentation of cues to activity that are incomplete and require, for stimulatory effect, the addition of some self-stimulation by the child. It initiates new thought processes which may lead to action. The child is apparently allowed to preserve behavioral autonomy, but guidance is offered in such a way that, with the assistance of additional cues either from his own thinking or from the external stimulus situation, the child is allowed to fashion his own response to the stimulation.

Of lowest stimulus value, in terms of specific adult direction, is mere spatial or socially conversational contact with the child (*c*). Also in this category is playing with the child on the child's own level, with an orientation toward his conception of play (*p*). Since these two types of behavior are heavily weighted with both stimulus and response components, they may be considered to represent the nearest approach to mutuality of any form of interaction.

Third, the *degree of interference or facilitation* of a child's ongoing activity is indicated by various categories. Presumably of least influence, either facilitative or inhibitory, is sheer lack of contact. In some instances, however, such behavior may be interpreted by the child as disapproval or rejection, and consequently may exert an inhibitory effect on his activity. On the other hand, the withdrawal of an overly stimulating adult could conceivably facilitate self-initiated activity on the part of the child. The bestowal of praise and affection is ordinarily facilitative in effect. Teaching, structurizing, and directing are increas-



TABLE 1  
CATEGORIES DESCRIPTIVE OF MOTHER BEHAVIOR  
(M = Mother; C = Child)

- o* *Out of contact*: M is sitting apart from C, and is either reading magazines or silently watching him while he plays independently.
- c* *Contact*: M is in contact with C either verbally or physically, or both. "Physically" means sitting or being near C as he plays, even though she says nothing. "Verbally" means purely social conversation with C; M is apparently not trying to shape or influence C's actions. Ex: "This is a nice water tank—we'll have to see if Daddy can build one for you like it."
- p* *Playing interactively*: M is playing with C within the framework of C's own conception of play; she plays as though she were another child. Ex: "I'll be the boat repair man and I'll fix your boat." (If any of the other categories descriptive of adult control or response occur while interactive play is in progress, they are recorded to the exclusion of *p*.)
- t* *Teaching*: M gives information to C for the purpose of increasing his knowledge. Ex: "This is a duck and that is a swan—swans have longer, thinner necks than do ducks." If the information is given to clarify and stimulate play possibilities, it should be marked *s*<sub>1</sub> or *s*<sub>2</sub>. Ex: (*s*<sub>1</sub>) "Turtles make houses in the sand—do you suppose this turtle would like to have a house?" Ex: (*s*<sub>2</sub>) "If you want to make this a suspension bridge, you'll have to build it high enough so those tall boats can go under it—how could you build it higher?" If teaching is done by structurizing, it should be marked *s*<sub>2</sub>. Ex: "Can you see how the swan is different from the duck?"
- h* *Helping*: M gives physical help to C. Ex: M pounds a nail for C or replaces the mast and the sail belonging to the sailboat.
- s* *Structurizing*: M facilitates activity on the part of C by methods which stimulate independent thinking and relegate the responsibility of decision to C. The quality of the guidance is to C apparently unobtrusive and unimposing. This method may often be used to divert or forestall undesired behavior, thus obviating the necessity for arbitrary demands.
  - s*<sub>1</sub> M makes a suggestion to C, offering him the option of acceptance. Ex: "You could give the baby doll a ride in the sailboat if you would like."
  - s*<sub>2</sub> M presents stimulus cues which are incomplete and which require, for full stimulus power, some individual thinking on the part of C. C is oriented toward several possible courses of action, any one of which he may choose. (The fact that the mother may later disagree with C's solution and use more directive methods of influencing his behavior does not negate her original use of the above method). Ex: M: "I imagine these animals would like a nice boat ride in the water." C: "But what can I use for a boat—these little boats aren't large enough." M: "Do you see something in this room out of which you could make a boat?" C: "Oh yes, I could make one out of those pieces of wood."
- d* *Directing*: M specifically states the course of action which she wants C to follow.
  - d*<sub>1</sub> M gives a directly phased command, but her manner and tone of voice imply fear of non-compliance. M gives indications of lack of confidence in her abilities to control C's behavior.
  - d*<sub>2</sub> M directs play operations. Although the nature of the activity to be carried out is explicitly stated, this type of directing does not imply a vital concern with compliance on the part of C. Ex: "Put my cup of tea here and put yours down over there—here, put a saucer under your cup and fill up the sugar bowl with some sand."
  - d*<sub>3</sub> M gives a direction to activity in a matter-of-fact manner with the implication that compliance is expected. Ex: "Put the doll over here on the table, Tommy, so she won't fall into the water again."
  - d*<sub>4</sub> The direction is firmly stated, making it clear that compliance is required. Ex: "I want you to close the window now, Johnny, not later."
  - d*<sub>5</sub> Emotionally toned demand in a stern voice with indications of anger. M infers that obedience is expected *or else*. Ex: "Look, I told you to wipe up that water you spilled and I meant it—get a paper towel and clean that mess up right now!"
- i* *Interference*: M interferes with an activity on C's part with the intent of stopping it completely. This is interpreted as a stimulus which causes a break in C's action pattern and which may conceivably be felt by C as thwarting or interrupting to his course of activity. Explicit directing is implied in this category.
  - i*<sub>1</sub> Similar to *d*<sub>1</sub>. The interference is ventured with a doubt that it will prove effective in stopping C's activity.
  - i*<sub>2</sub> A direct interference is phrased in a light manner or is accompanied by a laugh that may serve to lessen the degree of impingement on activity as experienced by the child. Ex: "Hey there, my boy—no more of that splashing."
  - i*<sub>3</sub> Interference is expressed in a matter-of-fact manner with the expectation that compliance will be forthcoming. Ex: "Don't ram the boats together any more, Jimmy."
  - i*<sub>4</sub> The interference is firmly stated, making it very evident that compliance is required. Ex: "No, Mary, you are *not* to drink the water from those cups."



TABLE 1—Continued

- i*<sub>5</sub> The interference is delivered with severity and indications of anger. Ex: "Now you stop putting all that sand in the water—did you hear what Mother said—Johnny, NO!"
- r* *Restriction*: M modified C's behavior by reducing intensity, speed, manner of executing, etc., but does not stop activity completely. Ex: "Don't handle those boats so roughly," or "Don't splash the water so high." This category is rated on a scale from 1-5 the same way as interference.
- si* *Interfering by structuring*: M indicates the undesirability of a certain action and/or the consequences of the act if carried out. She suggests that it would be wiser to refrain from continuing the particular behavior and may give the reason for her judgment. The final decision is relegated to C. Ex: "You know other boys and girls will want to play with those toys (floating celluloid animals) and if you mash them together like that they will be spoiled." This category is rated on a scale from 1-4 in the same way as interference. Instances of *si*<sub>5</sub> would not occur because this type of behavior is characterized by a calm, reasoning type of approach. If this form of control is accompanied by anger, then it should be marked either *r*<sub>5</sub> or *i*<sub>5</sub>.
- n* *Criticism*: M criticizes, blames, or punishes C.
- n*<sub>1</sub> Mildly delivered and phrased statement. The critical nature of the remark may be lightened by an accompanying laugh. Ex: "Well, that was sort of a silly thing for you to do, wasn't it?"
- n*<sub>2</sub> Controlled annoyance. The criticism is rendered in a firm manner, with disapproval apparent. Ex: "Now pay attention to what you are doing—you're pouring that water all over the table."
- n*<sub>3</sub> The criticism is phrased in an emotional manner, with anger evident. A verbal threat of punishment may be given. Ex: "Oh for heaven's sake, you're getting me all wet—why don't you ever watch what you're doing instead of always being so careless!"
- n*<sub>4</sub> Actual punishment, physical or disciplinary.
- m* *Praise or affection*: M praises or gives encouragement to C. This category also includes expressions of affection, such as petting or hugging the child.
- m*<sub>1</sub> M praises C's activity. Ex: "That's a very fine boat you've made." M encourages C. Ex: "Why, you are able to do that by yourself."
- m*<sub>2</sub> M gives reassurance to the child. This type of behavior is most likely to occur after the child has demonstrated some indications of anxiety. Ex: "It doesn't matter that you spilled the water—we can use these paper towels and wipe it up in a jiffy."
- + +1 M complies with a demand in a submissive manner, as though afraid of the dominating control of the child.
- +2 M reacts positively to C's stimulation but in a manner indicating reluctant, indifferent, or grudging acceptance. Ex: "Oh, all right—what do you want me to do?" This type of response was also scored when C initiated conversation with the mother while she was reading and she replied with an "un-huh" without looking up from her magazine.
- +3 Straightforward acceptance by M of the stimulation offered her, implying interest and willingness in co-operating with C's desires. Ex: "O.K., I'll set the table while you bake the cookies." Or M matter-of-factly reacts to criticism that has been given by C. Ex: "I guess I didn't do such a good job at fixing it after all."
- +4 M gives an eager, enthusiastic response to C's stimulation. Enters into the spirit of having fun with the child. Ex: "Why, I'd love to come to your tea party—what time would you like me to come?"
- *Non-co-operation*: M ignores, or refuses to comply with or to accept a verbal stimulation by C.
- 1 M ignores C's stimulation. Gives no overt or verbal indication of active response. Ex: Continues to read magazine when C addresses her. Or continues without comment an activity which C has indicated he wants her to stop.
- 2 Direct nonacceptance or refusal accompanied by a reason. Ex: "No, I guess I'd better not play in the sand with you—I want to keep this dress looking clean for the tea I'm going to later this afternoon." Also included under this rating would be justification in response to criticism. Ex: "Well, I can't manage a hammer as well as usual with this sore finger of mine."
- 3 Non-co-operation or nonacceptance is delivered without explanation but in a matter-of-fact manner. Ex: "No."
- 4 The negative response is given with force and firmness. Ex: "No, Mother doesn't want to play ball—she's busy reading now," or "No, I *didn't* push your house down—I haven't touched it."
- 5 Nonacceptance is accompanied by definite signs of anger and annoyance. Ex: "No, I don't want to play tea party—I told you that before—now don't interrupt me any more."

NOTE. For general statistical analysis the main behavior categories were used as listed above, with three exceptions: (1) category *c* was omitted and category *o* was used as an inverse measure of contact; (2) the various forms of interference (*i*, *r*, and *si*) were grouped together and symbolized by *I*; and (3) in order to make comparisons between individuals possible, co-operation and non-co-operation were expressed as a ratio of the negative responses to all responses, both positive and

negative:  $\frac{\text{negative}}{\text{total } R}$

ingly facilitative, but to exactly what extent is unknown, and they may, under some circumstances, assume the characteristics of interference with the child's activity.

Interference itself (*I*) was subdivided into three types. The least forcibly introduced type is that attempted by structurizing (*si*). A restrictive type of interference (*r*) denotes the mother's effort to modify an activity, in an inhibitory sense, without completely stopping it. Unqualified interference (*i*) would involve an attempt to achieve total discontinuation of an activity.

The ratings which were applied to several of these behavior categories were designed to qualify still further the degree of control, and the facilitative or inhibitory effect of the stimulation.

The *response* aspects of the adult's interaction with the child were indicated by a plus sign (+) if the child's stimulation was accepted, and by a minus sign (-) if it was refused, together with ratings expressive of qualitative differences in these responses.

It should be noted that the distinction which is made between stimulus and response aspects of the various behavior categories is essentially an oversimplification and does not imply that behavior in a social situation can be classified as unequivocally one or the other. What actually happens when two or more individuals are interacting is that the response of one member carries stimulus cues for the others, just as the stimulation effected by one of the group may be in turn a response to the antecedent conditions produced by the other. What is meant specifically by response in the present instance is the *immediate* acceptance or nonacceptance of the stimulation presented by another individual.

## 2. Categories Descriptive of Child Behavior

The categories representing child behavior were developed as systematic equivalents to those characterizing the behavior of the adult. The total array of categories can similarly be discussed in terms of (a) degree of contact, (b) degree of specificity of control, (c) degree of interference of facilitation, and (d) response.

In the case of categories *o*, *c*, and *p* the single symbol served to express the behavior of both the child and the adult. Stimulations on the part of the child directed toward the adult were defined and rated in the same way as for the adult in the following categories: directing (*d*→), interfering (*i*→), restricting (*r*→), and criticism (*n*→). The following categories were handled somewhat differently: *s*→ signified suggesting on the part of the child rather than structurizing; *h*→ and *t*→ denoted asking for help and asking for information, respectively; *m*→ represented seeking praise or affection and *m* described an expression of approval or affection toward the adult.

There were four additional categories of child behavior: calling attention to himself or to his activity (*a*→); asking for the spatial proximity of the adult (*c*→); indications of anxiety (*n*←); and asking permission (*s*←). These forms of behavior occurred with some frequency and possessed distinctive stimulation value in terms of adult response.

It will be noted that, in recording, child stimulations were distinguished from those instigated by the adult by the addition of an arrow to the letter symbol. There was one exception to this practice. Praise or affection on the part of the child was differentiated on the record blank from that given by the adult by

underlining the symbol (*m*).

The plus and minus signs were used to describe the response aspects of the child's behavior. Appropriate ratings were attached to these symbols, with the exception of response to *help* and the positive response to *teaching* (see Table 2).

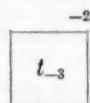
Table 2 presents the total series of child categories, together with the recording symbol and the definition.

### 3. Scoring Procedure

A sample of the recording blank that was used appears in the Appendix. When the symbols *o*, *c*, and *p* were recorded, they described both adult and child behavior. When a more specific type of stimulation was introduced by the adult, the appropriate symbol was recorded. If the child's response to the stimulation occurred within the same five-second interval, it was recorded within that scoring box, beneath the symbol for adult behavior. If the adult stimulation extended for more than one scoring interval, the appropriate symbol appeared singly until a response on the part of the child was evidenced. If the child's response occurred in the five-second interval following the termination of the adult stimulation, it was recorded singly. If a child delayed his overt response for several intervals or altered, without further stimulation, a response already made, then the response symbol was recorded in the interval in which the response occurred, accompanied by an arrow relating it to the stimulation that had instigated it.<sup>1</sup>

When the child presented a stimulation to the adult, the suitable symbol was entered within the scoring box. The response of the adult was recorded

directly above the box within whose time limits the behavior occurred. If within one five-second period, one of the interacting individuals presented a stimulus to which the other responded and then the first individual responded to that response, the three symbols could be recorded. For instance, if the adult said, "That boat is an airplane carrier" (*t*), and the child stated, "No, it isn't" (*-3*), to which the adult responded, "Yes, it is because look at the airplanes on the deck" (*-2*), it would have been recorded in this way:



Only one stimulation, either for the adult or the child, could be recorded within any one five-second interval, and only one response per individual. Within each five-second interval, then, a minimum of one symbol and a maximum of three could be recorded. If each of the individuals presented a stimulation within this period, the one which occurred first was scored and the other had, perforce, to be disregarded unless it was carried over into the next time interval. Since the time interval employed was very short, the instances in which one or two symbols did not completely describe the observed behavior were extremely infrequent.

### D. OBSERVER RELIABILITY

The reliability of observation and recording was measured by calculating the per cent agreement between two observers recording simultaneously during five half-hour periods immediately preceding the collection of the data reported here. The formula used was:

$$\frac{\text{number of agreements}}{360} \times 100 = \text{The number 360}$$

<sup>1</sup> In actual practice, this was a rare occurrence.

TABLE 2  
CATEGORIES DESCRIPTIVE OF CHILD BEHAVIOR  
(C=Child; M=Mother)

- o* C is playing independently while M is out of contact.
- c* C is playing and/or conversing while M is in physical or verbal contact with him, or both.
- p* C and M are playing interactively.
- t*→ *Seeking information*: C questions M in pursuit of factual knowledge. Ex: "What kind of a boat is this?"
  - +*t* C indicates interest in the information being given him by concentrated attention, further questioning, or comment.
  - t* C ignores teaching by interruption with irrelevant conversation, by lack of attention, or by walking off.
  - t*<sub>2</sub> C disputes information given him by offering his own reasons for a different interpretation of the facts. Ex: "No, this isn't a battleship because see, it has airplanes on top and that makes it an airplane carrier."
  - t*<sub>3</sub> C directly disagrees with the information provided him. Ex: "No, it isn't a towboat."
- h*→ *Seeking help*: Physical—asks M to help him either with some difficulty connected with his person or with his activities. Ex: "I can't pound this right—hold the nail for me." Mental—C asks for ideas in playing. Ex: "What can I do now?" or "How can I make this bridge stay up?"
  - +*h* C is receiving physical help from M. (If C has asked for mental help, either the positive or negative response is indicated within the same five-second interval, for instance, *s*, *d*, or perhaps *n*.)
  - h* C rejects help either physically or verbally. Ex: "No, I can do it by myself."
- s*→ *Suggests*: C suggests an activity for M or politely phrases his request. Ex: "Let's have a tea party now, shall we?" or "Will you bring me a towel, please?"
- a*→ *Seeking attention*: C calls attention to himself or to his activity; desires M's focusing on himself and what he is doing. This category is also scored whenever C initiates conversation with M while she is reading magazines.
  - a*<sub>1</sub>→ Matter-of-fact bid for attention. Ex: "Mother, look at what I'm making."
  - a*<sub>2</sub>→ Bid for attention in which C's motivation appears to be strong. This can be deduced most clearly in instances where C has already attempted several times to attract attention without satisfactory results. Ex: "Look at this road I've built—Mother—Mother, look!"
- c*→ *Seeking contact*: C asks for M to come into physical contact with him.
  - c*<sub>1</sub>→ Matter-of-fact bid for contact. Ex: "Mother, come over and sit by me."
  - c*<sub>2</sub>→ Bid for contact in which C's motivation appears to be strong. Ex: "Mother, I wish you'd come over and play in the water with me—won't you?"
- d*→ *Directing*: C specifically states the course of action which he wants M to follow.
  - d*<sub>1</sub>→ Meekly delivered direction implying doubt that the direction will be accepted.
  - d*<sub>2</sub>→ C directs M in the course of play operations. Motivation for coercive control at a minimum. Ex: "Put that block on top—give me the green one—here, hold the doll while I finish the house."
  - d*<sub>3</sub>→ Matter-of-fact direction with an increased emphasis on the importance of compliance. Ex: "You build a bridge for me, Mother."
  - d*<sub>4</sub>→ Direction is accompanied by evidences of emotionality. C may whine or start to cry; his voice may indicate tension. Ex: "Give it back to me—let me have it."
  - d*<sub>5</sub>→ C becomes aggressive in his direction. May hit or scream, or merely display verbal aggression. Ex: "You go back and sit down—the party isn't ready and I don't want you to come yet—you didn't wait until I called you—go away."
- i*→ *Interference*: C interferes with an activity on M's part with the intent of stopping it completely. Rated on a scale of from 1-5 in the same way as directing.
- r*→ *Restricting*: C attempts to modify M's behavior by qualifying its intensity, speed, manner of executing, etc. Rated on a scale from 1-5 in the same way as directing.



TABLE 2—Continued

- $n \rightarrow$  *Criticism*: C criticizes or blames M, or becomes physically aggressive.
- $n_1 \rightarrow$  Mildly delivered criticism. May be delivered in a joking manner. Ex: "You can't throw a ball very well, can you?"
  - $n_2 \rightarrow$  Strong criticism delivered with intent to belittle M. Ex: "Aw, this boat isn't any good—you don't know how to make one like my teacher does."
  - $n_3 \rightarrow$  Emotionally-toned criticism. Ex: "You're mean—I don't like you."
  - $n_4 \rightarrow$  Physical attack of aggression. Ex: "I'm going to kick you—there!"
- $m \rightarrow$  *Seeking praise*: C indicates a desire for praise or affection. Ex: "Mother, don't you think this is a nice house I've built?"
- $m$  *Praise*: C expresses approval or affection toward M, or is considerate of her welfare. Ex: "That's a nice house you built for the lobster," or "I'll wipe the water off this chair so you can sit here."
- $s \leftarrow$  *Asking permission*: C confirms the advisability of a proposed action. Ex: "May I put some of this sand in the water?"
- $n \leftarrow$  *Indications of anxiety*: C expresses verbally or nonverbally some concern over the consequences of his activity.
- $n_1 \leftarrow$  Matter-of-fact confession or momentary glance toward M, subsequent to the action. Ex: "I spilled some water, Mother."
  - $n_2 \leftarrow$  Evidence of increased concern. Ex: C has a worried expression as he announces, "I broke the turtle."
  - $n_3 \leftarrow$  Emotional reaction, including crying or near approach to it.
- $+$  *Co-operation*:
- $+1$  An inhibited acceptance or compliance which apparently shows some fear or anxiety components. Ex: In reaction to criticism, direction, or interference, C may visibly wince or start, may stand transfixed, and may be slowed down in his ability to start a new action pattern.
  - $+2$  C's response is conforming but is executed with reluctance and unwillingness. He is slow to carry out an action. Ex: "Well, all right, but I think it would be better the other way."
  - $+3$  Straightforward acceptance. Performs the required action promptly and with apparent willingness. Accepts criticism matter-of-factly.
  - $+4$  Eager, enthusiastic response. May even show wholehearted agreement with interference or criticism. Ex: "No, I won't drink the water any more—gee, it's probably dirty and I'd get sick, wouldn't I?"
- $-$  *Non-co-operation*: C ignores, or refuses to comply with or to accept M's stimulation.
- $-1$  C ignores M's stimulation. Gives no overt or verbal indication of active response. Continues to indulge in an activity with which M is attempting to interfere.
  - $-2$  Gives reason for noncompliance or justifies himself in response to criticism. Ex: "No, I can't set the table yet because I haven't finished the dishes," or "But I tried to be careful so it wouldn't spill."
  - $-3$  Non-co-operation or nonacceptance is delivered without explanation but in a matter-of-fact manner. Ex: "No," or "No, I don't want to do that."
  - $-4$  C becomes emotional in his resistance or nonacceptance. May whine or start to cry. Ex: "I don't want to have to do that—I don't want to, Mother." Cries in response to criticism.
  - $-5$  Aggressively resists or resents stimulation. Ex: "No, I won't and you can't make me either!" or "I'm not either a silly—you're a silly!"

NOTE. Two ratios were formed to express response aspects of the child's behavior. This was necessary in order to equalize for amount of stimulation, offered by the mother, to which the child could respond. The two ratios most frequently used in statistical analysis were:

$$\frac{-}{(+3 \& +4) + (-)} \quad \text{and} \quad \frac{(+1 \& +2)}{\text{Total} +}$$

The former expresses the proportion of negative response to what may be termed "wholehearted acceptance." The frequency of nonacceptance was added to the denominator in order to give a ratio with possible values ranging from 0 to 1. The second of the two ratios cited above represents the frequency of inhibited and reluctant responses expressed as a proportion of the total number of positive responses.

Whenever the symbol *ac* is referred to in connection with child behavior, it signifies a combination of the *bid for attention* and *bid for contact* categories. These can be logically combined as an expression of the child's attempts to establish a closer social relationship.



TABLE 3  
AVERAGE PER CENT AGREEMENT BETWEEN  
TWO OBSERVERS AT FIVE HALF-  
HOUR SESSIONS

Category	Median Reliability	Mean Reliability
<i>Adult Categories</i>		
<i>c</i>	.97	.96
<i>o</i>	.96	.94
<i>p</i>	.92	.83
<i>h</i>	.93	.90
<i>t</i>	.80	.76
<i>s</i>	.87	.84
<i>d</i>	.82	.77
<i>si</i>	.80	.80
<i>r</i>	1.00	.91
<i>i</i>	.91	.87
<i>m</i>	1.00	.89
<i>n</i>	.86	.75
+	.87	.88
-	.91	.81
<i>Child Categories</i>		
<i>a</i> →	.86	.86
<i>c</i> →	1.00	.93
<i>d</i> →	.94	.91
<i>i</i> →	1.00	1.00
<i>n</i> →	.75	.58
<i>h</i> →	.93	.88
<i>t</i> →	1.00	.83
+	.91	.85
-	.95	.89

represents the total number of symbols recorded in a 30-minute period, one symbol being recorded for every 5-second interval. This expression of reliability does not include the categories *co-operation* and *non-co-operation* for either the adult or the child, since when a response was recorded it usually accompanied a categorized type of stimulation on the part of the other individual, which resulted in more than one symbol being included within one 5-second interval. The reliability of these two categories is presented separately. The total reliabilities of each of the last five sessions in which the two observers worked together, representing a total of 150 minutes of observation, ranged from .83 to .92 and averaged .87.

The observer reliability for each category was also established, using the formula: number of agreements divided by the number of agreements plus one-half the number of disagreements. For the main categories used in this study, the median and mean reliabilities for the five sessions are presented in Table 3. The child categories *suggesting, indications of anxiety, expression of approval, asking for praise, and asking permission* did not occur in these five sessions.

The observer reliability for the ratings used in connection with some of the categories was computed separately, employing the same formula that was used with the individual categories. Reliabilities for the five sessions ranged from .81 to .93 and averaged .88.

#### E. MATCHING

The division of the 34 children into two matched groups, for the purpose of determining the order in which they would be tested with the adults, was made on the basis of chronological age and sex. An original selection of 36 children had been matched equally with respect to sex and very closely with reference to age. During the progress of testing, two children, one boy and one girl, had to be eliminated from one group due to unexpected developments in the home which precluded the experimental participation of these mothers. Close matching was still possible with the exception that in one instance it was now necessary to pair a boy and a girl.

A table (not presented in this monograph) was prepared to compare the two groups with respect to the mean frequency of the various behavior categories in two sessions for mothers, children, and neutral adult. The *t*-test for related samples was computed for each category on the basis of the paired children. None of the differences was significant at or beyond the 5 per cent level of confidence, with one exception. *Asking for information* on the part of the child

showed a significant difference at the 2 per cent level when the frequency of this behavior with the neutral adult was compared between groups. Those children who were tested with the neutral adult first asked for information significantly more than those who were tested with her second. The same trend is indicated when a comparison is made between the total frequency of this category for the children tested with their mothers first and those tested with the mother second. This difference, however, did not prove significant. It would be anticipated that the child would ask more questions, especially concerning unfamiliar play equipment, of the adult who was first present with him in the experimental room.

Product-moment correlations for each of the categories were computed for all three comparisons. None of the coefficients was significant at the 5 per cent level. This would seem to indicate that, in terms of the behavior categories employed, the factors of age and sex of the children produced no systematic similarity in behavior on the part of the mothers, the neutral adult, or the children themselves.

#### F. CONSISTENCY OF THE NEUTRAL ADULT

The individual selected to serve as the neutral adult was a married woman in her middle twenties. In the experimenter's opinion she satisfied very well the necessary qualifications: a pleasing open manner, poise and assurance, an even disposition, and a responsiveness to children. She was instructed to make each session a pleasant experience for the child and to maintain a mutually responsive interactive relationship. She gave no aggressive stimulations or responses to the children. Strong demands or interferences were given very infrequently and only when the welfare of the child or the experimental procedure was at stake. A subjective evaluation of her behavior indicated that qualitatively her manner, attitude, and social responsiveness were constant from child to child.

In order to make comparisons between the child's behavior with the neutral adult and with the mother, however, it was necessary to place further controls on the behavior of this individual. After having familiarized herself with the

eleven main behavior categories which were used in scoring adult behavior, she was given a frequency range for the first nine of these categories as listed in Table 4 within which her behavior toward all the children should fall. Since the frequency of *co-operation* and *non-co-operation* was determined entirely by the amount of stimulation given by each child, the only stipulation in this case was that the positive responses should exceed the negative responses.

The aim was to have the frequency of these adult behavior categories as similar as possible for all children. It would be impossible, however, for an individual involved in an interactive relationship during 68 free-play situations to maintain a constant frequency (in terms of number of five-second intervals) of behavioral items. Nor would it have been desirable for her to have attempted a mental tabulation of her behavior, for it was deemed more important that she maintain a relaxed and spontaneous social relationship. An additional problem was the fact that she was reacting to 34 children whose individual differences would tend to color and render more or less difficult the effecting of a completely standardized pattern of behavior.

Granting these manifest difficulties in the maintenance of strictly consistent behavior from child to child, it is still necessary to show that within limits this individual behaved with satisfactory similarity throughout the experiment. For this purpose the total sample of 68 sessions was divided into two distributions in two different ways: (a) according to the order in which the child was tested with the neutral adult, and (b) according to first and second session. The averages for the various categories for each of the four distributions were computed. The *t*-test for independent samples was applied to the data organized according to order of testing, because in this case the children were randomly paired.<sup>2</sup>

<sup>2</sup>A comparison of neutral adult behavior analyzed according to testing order when the children were paired for age and sex has already been discussed in Section E, above.

The *t*-test for related samples was used with the set of distributions comparing the first and second sessions, the basis for pairing in this instance being the individual child. None of the differences was significant at or beyond the 5 per cent level of confidence. The *F*-test for variability was also applied to both sets of distributions, and none of the differences in variability was significant.

Although the *t*-test and *F*-test indicate no significant differences in the means or in the variability of the two sets of distributions, they do not offer specific evidence of consistency in behavior from child to child. For those categories whose frequency ranged above 5, a chi-square test for goodness of fit was computed, using the general mean of the distribution of 68 sessions as the theoretical frequency. In the case of the categories *out of contact* (*o*) and *interactive play* (*p*) a range of 12 (6 on either side of the mean) was allowed before deviations were tabulated. A range of 6 (3 on either side of the mean) was allowed in the case of *teaching* (*t*). This was felt to be permissible since these three types of behavior are usually of longer duration at any one time than are the other categories and do not have a proportionate stimulus value in terms of social control as do the other categories. Some leeway in the variability of these categories could still be reconciled with relative consistency of behavior as it would affect the child. None of the chi-square values proved significant at or beyond the 5 per cent level of confidence.

Seventeen chi-square tests for homogeneity were applied to a random pairing of the 34 children. In these tests the total frequency for two sessions for the first eight categories in Table 5 was used. In this instance no allowance was made for the frequencies of *o*, *p*, or *t*. Of the 17 chi-square values, 8 were significant at or beyond the 5 per cent level of confidence.

In order to test for any gradual change in behavior pattern as the experimental series pro-

gressed, the chi-square test for homogeneity was applied as above to the five children tested first and the five children tested last. Two out of the five chi-square values were significant at or beyond the 5 per cent level of confidence.

These chi-square tests indicate some variability in the neutral adult's behavior from child to child. The comparison between her behavior toward those children tested first and those tested last, however, would seem to show that her variability was no greater from first to last sessions than it was from child to child.

Two further statistical checks on the consistency of neutral adult behavior were made. The *F*-test was used to compare the variability of her behavior with that displayed by the mothers. For all categories this test showed more variability on the part of the mothers—far beyond the 1 per cent level of significance. In addition, the same correlations were computed between neutral adult behavior and child behavior that produced significant relationships when mother behavior and child behavior were compared (the latter results will be discussed in the following chapter). In this case, however, none of the coefficients was significant at or beyond the 5 per cent level of confidence required for significance with samples of this size. This would suggest that the neutral adult did not react in any systematic fashion to certain forms of child behavior that might have produced uniform types of response on her part.

Although statistical analysis of the behavior of the neutral adult indicates that she varied somewhat from child to child, she probably approached as satisfactory a degree of consistency as could be expected in relatively unstructured, social relationships with 34 different children.

## CHAPTER III

### RESULTS

THE four problems investigated in this study are (a) the consistency of mother-child behavior as an indication of the validity of the observed relationship, (b) possible correlations between maternal behavior and child behavior patterns, (c) an analysis of child behavior for all four sessions in order to study relationships between child behavior evidenced with the mother to that shown in a social situation with another adult, and (d) individual differences in mother-child interaction. Results bearing on these four problems will be discussed separately.

#### A. CONSISTENCY OF MOTHER-CHILD BEHAVIOR

##### 1. Behavior of the Mother

One basis for evaluating the meaningfulness of the behavior observed in this study lies in the consistency with which that behavior appeared. This variable

was studied by comparing the first and second sessions of the mothers. Since the conditions for the two sessions were identical, the behavior appearing in the first session should have been repeated in the second if the categories were measuring a consistent aspect of the mothers' treatment of their children under those conditions. The averages, by categories, for the first and second session are presented in Table 4. When the *t*-test for related samples was applied to the averages, none of the differences was found to be significant, with the exception of *teaching*, which showed a significant difference at the 5 per cent level of confidence. The mothers evidenced more of this behavior in their first session with the child than in the second session. This difference is accounted for by the fact that a child tends to exhibit more curiosity when either the physical environment or the social situation is new to him, or

TABLE 4  
AVERAGE FREQUENCY OF EACH CATEGORY ON MOTHER'S FIRST AND SECOND SESSIONS,  
PROBABILITY OF CHANCE DIFFERENCES BETWEEN THEIR MEANS AND VARIABILITIES,  
AND PRODUCT-MOMENT AND RANK-ORDER CORRELATIONS BETWEEN SESSIONS  
(*N* = 34)

Category	Average Frequency		Probability of Chance Difference between Means	Probability of Chance Difference in Varia- bility	<i>r</i> between Sessions	<i>Rho</i> between Sessions
	First Session	Second Session				
<i>o</i>	79.7	86.8	.55	> .05	.80	.90
<i>p</i>	11.0	16.7	.10	> .05	.64	.65
<i>t</i>	21.4	15.2	.05	> .05	.74	.48
<i>h</i>	4.8	4.0	.35	> .05	.21	.64
<i>s</i>	14.8	12.2	.20	> .05	.60	.64
<i>d</i>	13.7	12.9	.75	> .05	.54	.62
<i>I</i>	8.9	7.9	.35	> .05	.76	.52
<i>m</i>	3.1	2.7	.45	> .05	.56	.57
<i>n</i>	3.9	3.7	.75	> .05	.81	.61
<i>R</i>	0.33	0.36	.30	> .05	.71	.58



both. A corroboration of this fact has already been discussed in the statistical analysis of child behavior with reference to order of being tested (see Chapter II, section E).

To determine the variability of individual changes from the first to second session, the *F*-test was applied by categories to measures expressive of mean deviations. None of these differences was significant at or beyond the 5 per cent level.

A direct measure of the consistency of the mothers from the first to the second session was made by both rank-order and product-moment correlation between the frequencies of each category. These coefficients are given in the last two columns of Table 4. With two exceptions, the values are all reasonably high.

It is evident, then, that the experimental conditions offered the mothers an opportunity to display consistent behavior patterns. Analysis of the data, however, does not answer the significant question of whether or not this behavior constituted a representative sample of each individual mother-child relationship. It might be said that since no explicit directions were given the mother, external forces were at a minimum and therefore her customary behavior would be exhibited.

The fact that the mother knew that an observer was present would obviously tend to encourage socially acceptable behavior and to inhibit other, perhaps more habitual, responses to the daily problems and the ups and downs of family life. Since the observer was behind a screen rather than within the room itself, this effect may have been somewhat reduced. Another factor in obviating undue constraint was the mother's understanding that it was the child's play which was being observed and studied, and not her own behavior. The knowledge that she herself was not under specific scrutiny would tend to relax reserved behavior on her part.

There was a large number of instances in

which mothers acted as if they were ignoring the presence of a third person; indicative of this was an excess of extremely firm demands, criticisms, strongly phrased interference, and obvious annoyance. In short, the writer felt that in some measure she was obtaining a reasonably close approximation to the essential mother-child relationship in each case. Especially was this felt to be true when the less socially approved types of behavior were manifest. If a mother exhibited such behavior in the presence of a stranger, its habitual character could be more safely assumed. On the other hand, if the mother displayed a more pleasant and socially preferable type of interaction with the child, it could not be ascertained whether such behavior played a predominant role in their relationship, or whether it was merely conditioned by the presence of the experimenter.

On the whole, then, the experimental setup offered a situational framework to the mothers which evoked behavior that was consistent under repetition. The reliability of this behavior as an indication of the actual mother-child relationship cannot be directly expressed. What can be assuredly stated is that a sample of the mother's behavior was obtained in a situation in which attention was presumably focused on the child and in which external and specific factors influencing her behavior were, in terms of experimental conditions, at a minimum. What she did, therefore, was a function of her reactions either to a situation in which her child was being watched and judged by a third person, or to a situation in which she and her child were dependent on each other's company for thirty minutes, or a combination of both. Since both situations are typical of daily living, it may be assumed that an approximation of the actual relationship was secured.

## 2. Behavior of the Child

Table 5 presents the averages of the main categories of child behavior for the two sessions in which the child was



TABLE 5  
AVERAGE FREQUENCY OF EACH CATEGORY OF CHILD BEHAVIOR IN FIRST AND SECOND  
SESSIONS WITH THE MOTHER, AND PROBABILITY OF CHANCE DIFFERENCES  
BETWEEN THEIR MEANS AND VARIABILITIES

Category	Average Frequency		Probability of Chance Difference between Means	Probability of Chance Difference in Vari- ability
	First Session	Second Session		
<i>ac</i>	9.1	7.6	.15	> .05
<i>d+i+n</i>	9.2	9.0	.85	> .05
<i>s→</i>	1.7	1.9	.55	> .05
<i>h→</i>	2.3	2.0	.60	> .05
<i>l→</i>	4.4	3.9	.45	> .05
<i>n←</i>	0.7	0.6	.85	> .05
<i>s←</i>	2.2	2.1	.90	> .05
<i>SS</i>	4.6	4.1	.75	> .05
Non-co-operation	0.55	0.53	.55	> .05
Reluctant co-operation	0.26	0.30	.45	> .05

tested with his mother.<sup>1</sup> The *t*-test for related samples was used to analyze the individual differences between sessions. None of the differences was significant at or beyond the 5 per cent level of confidence. Application of the *F*-test revealed no significant differences in variability.

These data suggest that the experimental conditions offered a situation in which the child could display consistent forms of the particular aspects of behavior under observation. Whether this behavior was indicative of his customary role in the mother-child relationship cannot be directly ascertained. Unlike the mother, the child was not aware of an observer's presence; therefore, this variable was not operating to influence his behavior. Furthermore, the experimental situation was not an unfamiliar one to him, since the children attending this preschool are accustomed to "playing games" in the laboratory building. The fact that the mother was present in the situation, however, did add a new feature to the experience.

Since the child's relationship with his

<sup>1</sup> The category *SS* listed in Table 5 represents the total of all strong and aggressive stimulations made by the child.

mother is a close one and is probably not so subject to influence from external social factors as is the mother's, it is felt that the child was displaying a representative sample of his behavior toward her. A variation in his customary behavior may have been exhibited only if the mother diverged radically from her habitual role in their relationship.

The child's behavior with the neutral adult will be discussed in a later section.

#### B. CORRELATION BETWEEN MOTHER BEHAVIOR AND CHILD BEHAVIOR

In order to investigate possible relationships existing between certain types of behavior on the part of the mother and the behavior evidenced by the child in his two sessions with the mother, product-moment correlations were computed between frequencies for the various categories of mother and child behavior. The correlation coefficients for those categories which showed some degree of relationship are present in Table 6.<sup>2</sup> For all

<sup>2</sup> The correlations presented in Table 6 are based on an *N* of 33. One case was eliminated from the sample for this analysis because the mother and child spent a total of only two minutes in interaction during their two sessions together.

TABLE 6

PRODUCT-MOMENT CORRELATIONS BETWEEN FREQUENCIES OF CATEGORIES FOR MOTHERS AND FREQUENCIES OF CATEGORIES FOR CHILDREN IN THEIR TWO SESSIONS TOGETHER\*

Child Category	Mother Category				
	Specific Control	Strong Stimulation	Noncontact	Specific Control plus Noncontact	Non-co-operation
Specific control	.39	.39	.44	.42	.39
Strong stimulation	.11†	.38	.48	.51	.61
Aggressive stimulation and response	.35	.54	.50	.53	.66
Non-co-operation	.45	.52	.56	.62	.58
Non-co-operation plus reluctant co-operation	.59	.57	.49	.58	.66
Reluctant co-operation	.70	.71	.35	.45	.63

\* All  $r$ 's are positive.

† Not significant at the .05 level of confidence for samples of this size.

other categories, either no statistically significant relationship was found or the frequency was too low for meaningful interpretation.

Certain combinations of the categories were made on logical grounds. Wherever feasible, the behaviors correlated were expressed in terms of proportions in order to equalize for varying amounts of interaction in the different mother-child pairs. A description of these proportions follows. The labels used subsequently to refer to the proportions are noted in parentheses after each symbolic representation.

The ratio

$$\frac{d+i+n}{(d+i+n)+s}$$

(specific control) for both mother and child, expresses degree of specificity of control by contrasting directing-interfering-criticism behavior, which represents a reasonably high specificity of control, with suggesting and structurizing behavior, which is presumably less specific in control. The proportion

$$\frac{SS}{(d+i+n)+s}$$

(strong stimulation) expresses a still higher degree of specificity of control. SS

(strong stimulations) is a combination of strong and aggressive stimulations, including all directing and interfering which were rated 4 or 5, and all criticism by the mother given a rating of 3 and all criticism by the child given a rating of 2 or 3.<sup>3</sup> (SS) + (-4 & -5) (aggressive stimulation and response) in the child column represents the addition of the child's emotionally and aggressively negative responses as descriptive of those children who were aggressive in both stimulation and response aspects of their behavior. The category *out of contact* (o) in the mother column indicates the degree of contact between mother and child. The expression  $d+i+n+o$  (specific control plus noncontact) combines behaviors representing degree of specificity of control and degree of contact.

Several ratios expressing response aspects of both mother and child behavior were made. In the mother column,

$$\frac{-}{R}$$

(non-co-operation) denotes the ratio of her negative responses to her total re-

\* Actual punishment or aggressive attack ( $n_s$ ) did not occur in the records of any mother or child.

sponses, both positive and negative. In the child column,

$$\frac{-}{(+3 \& +4) + (-)}$$

(non-co-operation) refers to the proportion of all negative responses to matter-of-fact and enthusiastic acceptance plus all negative responses;

$$\frac{(-) + (+1 \& +2)}{\text{total } R}$$

(non-co-operation plus reluctant co-operation) indicates the ratio of negative responses plus inhibited and reluctant acceptance to all responses, both positive and negative; and the ratio

$$\frac{+1 \& +2}{\text{total } +}$$

(reluctant co-operation) expresses the proportion of positive responses which were inhibited and reluctant. It was felt that a differentiation of the positive responses into complete acceptance (+3 & +4) and inhibited and reluctant co-operation +1 & +2) was important, since the latter types of behavior, although overtly representing conformity to the mother's stimulation, imply a certain resistance (+2) or an obedience stemming from fear of consequences (+1) which are behaviorally dissimilar to straightforward co-operation.

All correlations were computed on the basis of total frequencies for the categories during two sessions. For example, the correlation between

$$\frac{d+i+n}{(d+i+n)+s \rightarrow}$$

and

$$\frac{-}{R}$$

is based on all  $d+i+n$  and  $s \rightarrow$  types of stimulation by the child and all negative responses of the mother, whether to  $d+i+n$  and  $s \rightarrow$  or to other kinds of stimulation.

It should be noted that all the ratios listed in Table 6, with the exception of

$$\frac{SS}{(d+i+n)+s}$$

for both mother and child, can be inverted to describe a contrasting type of behavior. For example, the inverted form of

$$\frac{(-) + (+1 \& +2)}{\text{total } R}$$

would be

$$\frac{+3 \& +4}{\text{total } R}$$

which would express the ratio of straightforward co-operation (+3 & +4) to all responses, both positive and negative. If all these ratios in Table 6 were so inverted, then the correlations between them would remain the same. If only those ratios in the child column were inverted, all correlations with maternal behavior (including the mother categories  $o$  and  $d+i+n+o$ , which are based on straight frequencies) would be numerically identical but in the negative direction.

Specific control on the part of the mother showed positive correlations with the same behavior pattern in the child and with the various measures of child resistance and non-co-operation. It did not, however, show a significant correlation with strong and aggressive stimulations by the child. These data would seem to indicate that those mothers who tended to show a fairly high degree of specificity of control over their children had children who similarly tended to be specific in their control over the mother and who also tended to be resistant and non-co-operative. Conversely, a positive correlation existed between suggesting and structurizing behavior by the mother and the various measures of wholehearted co-operation, together with the use of the

suggesting type of behavior, by the child. These results offer some basis for hypotheses. It would appear that those mothers who employ less forcible types of control are less likely to instigate non-co-operation and aggressive behavior in their children. The child whose individuality, opinions, and abilities are recognized whenever possible may feel less necessity for asserting his independence in negative responses. There is also an indication that the child reflects in his own behavior the type of control which his mother has used in guiding his behavior.

Strong stimulations by the mother showed a positive relationship with the two measures of child non-co-operation and a particularly high relationship with inhibited and reluctant acceptance on the part of the child. It also correlated positively with a tendency by the child to behave similarly, and to be aggressive in both his stimulation of, and his response to, the mother. It is possible that the habitual use of coercive control, rather than reserving it for occasions when compliance is essential, tends to encourage a general resistance in the child and/or a grudging acceptance of many of the mother's stimulations. On the other hand, a mother may find it necessary to use highly specific types of control over a child who is unusually aggressive and resistant in his behavior. The extent to which each of these factors contributed to the obtained correlations cannot be determined.

A tendency on the part of the mothers to remain out of contact with their children correlated positively with the following measures of child behavior: high specificity of control, aggressive resistance, non-co-operation, and inhibited and reluctant co-operation. It was also

discovered that those mothers who had a high frequency in this category also tended to be more highly specific in their control and more non-co-operative when they did interact with their children.<sup>4</sup> When specificity of control, as represented by the frequency of directing-interfering-criticism behavior, was combined with the frequency of out-of-contact behavior, the coefficients of correlation with the child behavior categories were, with one exception, raised slightly.

Exactly what the mother's lack of contact with the child signified under the experimental conditions is difficult to state. The mothers varied widely in this type of behavior; some spent the major part of the time in reading the magazines whereas others were in physical and/or verbal contact with the child for the entire session. For many of the mothers who had high frequencies in the noncontact category, their reading of the magazines appeared to hold far greater value to them than any wholehearted responsiveness to the child. If it is assumed that such behavior was representative, these mothers might be characterized as those whose relationship with the child is composed mainly of adult control with very little sharing of the child's activities and interests. That the child may react to such behavior as a mild form of rejection and so be more resistant and more strongly directive in his stimulations in order to gain attention is an hypothesis which these data suggest but do not substantiate.

Negative responses on the part of the mother correlated positively with non-co-operation by the child, a further example of correspondence between similar patterns of behavior in mother and

<sup>4</sup> See correlations between categories of mother behavior presented in Table 7.



TABLE 7  
PRODUCT-MOMENT CORRELATIONS BETWEEN  
CATEGORIES OF MOTHER BEHAVIOR AND BETWEEN  
CATEGORIES OF CHILD BEHAVIOR\*

Mother Category	Mother Category			
	Specific Control	Strong Stimulation	Non-contact	Non-co-operation
Specific control	—	—	.45	.48
Strong stimulation	—	—	.43	.64
Noncontact	.46	.43	—	.63
Non-co-operation	.48	.64	.63	—
Child Category	Child Category			
	Non-co-operation	Non-co-operation Plus Reluctant Co-operation	Reluctant Co-operation	
Specific control	.38	.42	.39	
Strong stimulation	.44	.35	.34	

\* All  $r$ 's are positive.

child. They also revealed a positive relationship to the less wholehearted forms of child co-operation. Positive coefficients were obtained between the mother's negative responses and aggressive stimulations and responses by the child. These forms of behavior are probably intimately interdependent and are, therefore, less amenable to hypotheses concerning causal relationships.

Correlations between categories of mother behavior and between categories of child behavior are presented in Table 7. It was found that there was some tendency for certain behavior patterns to be coexistent in both mother behavior and child behavior. In the case of the mothers, those who were highly specific in their forms of control also tended to remain out of contact with the child and to be more negative in their responses to

him. Likewise, those children who tended to be specific and aggressive in their stimulation of the mother were somewhat more likely to be negativistic in their response to her. These correlations further highlight the complex interweaving of stimulus and response behavior patterns which characterize the close interpersonal relationship of a mother and child.

The results presented in this section point to various relationships between the behavior of a mother and the particular kinds of stimulation and response the child has learned to use in his interactive relationships with her. Although the correlations obtained are not uniformly high, trends are indicated. The present data do not offer an absolute basis for interpretive analysis, but they do suggest hypotheses which further research would need to substantiate.

### C. ANALYSIS OF CHILD BEHAVIOR

#### 1. Behavior with Neutral Adult

A description of the child's behavior with the mother was presented in a previous section. Statistical analysis showed that his behavior with her was consistent from the first to the second session.

When the child's behavior from first to second session with the neutral adult was compared, however, significant changes in behavior were evidenced in the case of the following categories:  $d+i+n$ ,  $t \rightarrow$ ,  $s \leftarrow$ , SS, non-co-operation, and reluctant co-operation. The  $t$ -test for related samples showed that these differences were all significant at or beyond the 5 per cent level of confidence. The  $F$ -test also indicated a significant difference in variability for the first four of these categories.<sup>5</sup> Table 8 presents a sum-

<sup>5</sup> The validity of the  $t$ -test may be somewhat reduced for these categories in which the  $F$ -test demonstrated relatively large differences in  $SD$ .

TABLE 8

AVERAGE FREQUENCY OF CHILD CATEGORIES IN FIRST AND SECOND SESSION WITH THE NEUTRAL ADULT AND PROBABILITY OF CHANCE DIFFERENCES BETWEEN THEIR MEANS AND VARIABILITY;  
AVERAGE FREQUENCY OF CHILD CATEGORIES IN BOTH SESSIONS WITH THE NEUTRAL ADULT AND BOTH SESSIONS WITH THE MOTHER, PROBABILITY OF CHANCE DIFFERENCES BETWEEN THEIR MEANS AND VARIABILITY

Category	Neutral Adult		Probability of Chance Difference between Means	Probability of Chance Difference in Variability
	First Session	Second Session		
<i>ac</i>	3.7	3.3	.55	.01
<i>d+i+n</i>	6.1	12.0	.001	.01
<i>s</i> →	1.2	1.6	.45	>.05
<i>h</i> →	1.7	2.0	.60	>.05
<i>t</i> →	6.4	4.4	.01	>.05
<i>n</i> ←	0.6	0.7	.90	>.05
<i>s</i> ←	1.6	0.9	.02	.01
<i>SS</i>	1.3	2.2	.05	.01
Non-co-operation	0.32	0.40	.01	>.05
Reluctant co-operation	0.06	0.12	.01	>.05

Category	Neutral Adult	Mother	Probability of Chance Difference between Means	Probability of Chance Difference in Variability
	Average for Two Sessions	Average for Two Sessions		
<i>ac</i>	3.5	8.4	.01	>.05
<i>d+i+n</i>	9.1	9.1	—	>.05
<i>s</i> →	1.4	1.8	.40	>.05
<i>h</i> →	1.9	2.2	.45	>.05
<i>t</i> →	5.4	4.3	.15	>.05
<i>n</i> ←	0.7	0.7	—	>.05
<i>s</i> ←	1.3	2.2	.01	>.05
<i>SS</i>	1.8	4.4	.01	>.05
Non-co-operation	0.37	0.54	.001	>.05
Reluctant co-operation	0.09	0.28	.001	>.05

mary of these findings.

The significant difference in *asking for information* between the first and second sessions has already been discussed as a function of the unfamiliarity of the experimental setup when first presented to the child. It was found that this type of behavior was significantly more in evidence in the children who were tested first with the neutral adult.

The other categories which showed a significant difference will be discussed in the following section.

## 2. Analysis of Differences in Behavior Shown with the Mother and with the Neutral Adult

The averages by categories for the

child's two sessions with the mother and for his two sessions with the neutral adult are given in Table 8. The *t*-test for related samples was applied to the data and significant differences were found in the following categories: *ac*, *SS*, *s*←, non-co-operation, and reluctant co-operation. All these differences were in the direction of a greater frequency evidenced in the presence of the mother. None of the differences in variability, as tested by *F*, was significant.

The increase in attempts to establish verbal or physical contact (*ac*) was probably due to the fact that the mothers spent, on the average, more time out of contact with the child than did the neutral adult. (The average frequency of



TABLE 9

AVERAGE FREQUENCY OF CHILD CATEGORIES SHOWING GENERALIZATION OR DIFFERENTIATION IN FIRST AND SECOND SESSION WITH THE NEUTRAL ADULT AND IN BOTH SESSIONS WITH THE MOTHER; AVERAGE OF DIFFERENCES IN FREQUENCY (CONVERTED TO A POSITIVE SCALE) BETWEEN FIRST AND SECOND SESSION WITH THE NEUTRAL ADULT COMPARED ON BASIS OF ORDER OF TESTING, AND PROBABILITY OF CHANCE DIFFERENCE IN MEAN DIFFERENCE

Category	Neutral Adult		Mother
	Average Frequency		Average Frequency in Both Sessions
	First Session	Second Session	
$d+i+n$	6.1	12.0	9.1
$s \leftarrow$	1.6	0.9	2.2
SS	1.3	2.2	4.4
Non-co-operation	0.32	0.40	0.54
Reluctant co-operation	0.06	0.12	0.28
Category	Average of Difference in Frequency		Probability of Chance Difference in Mean Difference
	Tested with Neutral Adult First	Tested with Mother First	
$d+i+n$	12.8	17.7	.15
$s \leftarrow$	5.2	6.0	.11
SS	6.1	7.2	.25
Non-co-operation	35.9	32.9	.60
Reluctant co-operation	10.9	11.3	.85

for the mothers was 83.5 compared to an average frequency of 35.1 for the neutral adult.)

Differences in the other four categories indicate that the child showed more instances of *asking for permission*, a greater frequency of strong and aggressive stimulations, more instances of non-co-operation (and conversely, less "wholehearted" co-operation), and more inhibited and reluctant acceptance of stimulation with the mother than with the neutral adult.

Table 9 presents the average of these

categories for the first and second sessions with the neutral adult and the average for both sessions with the mother. In the case of strong and aggressive stimulations, resistance, and inhibited and reluctant co-operation, a progressive increase is noted from the first session with the neutral adult to the two sessions with the mother. This seems to present some evidence for stimulus generalization in the behavior of the child. In other words, as the child became more familiar with the neutral adult, these three types of behavior approximated more closely his behavior with the mother.

In the case of *asking for permission*, although the difference between the child's use of this technique in the first session with the neutral adult and the first session with the mother was not significant, there was a significant decrease in this type of behavior from the first to the second session with the neutral adult. In this instance there seems to be some basis for postulating differentiation of behavior. When the decrease between the sessions with the neutral adult was correlated with strong stimulation on the part of the mother, a correlation of +.41 was obtained. This suggests that those children whose mothers rated relatively high in specificity of control showed a tendency to investigate the limits which another individual might intend to place on his behavior. When this individual displayed a relatively nonrestrictive type of control, these children found it less necessary to have these limits defined.

Differentiation also seemed to be indicated in the child's  $d+i+n$  type of behavior, even though the average for the two sessions with the neutral adult was not significantly different from the average for the two sessions with the mother.

Table 9 shows the averages for this category for the first and second sessions with the neutral adult and for the two sessions with the mother. In this instance there is a significant increase in the behavior from the first to the second session with the neutral adult which significantly exceeds in frequency that exhibited in the presence of the mother. When this increase in frequency between the first and second sessions with the neutral adult was correlated with noncontact, specific control, and strong stimulation on the part of the mother, positive coefficients of .42, .33, and .36, respectively, were found. Although these correlations are low, they suggest some tendency for the children of mothers who exhibited high specificity of control and lack of contact with the child to become highly directive as familiarity with the neutral adult increased.

These results suggest that the children whose mothers were very specific in their control or who showed a mild form of rejection (if *lack of contact* in the present experiment can be so interpreted) tended to increase their control as much as possible over another individual in a similar social situation. In the case of the relationship with *lack of contact*, the behavior may have constituted a form of aggression, which several investigators have found to be related to maternal rejection. Or it may simply have represented an expressed need for interpersonal contact. Its relationship to the degree of control exercised by the mother may have stemmed from an original learning of this type of behavior through its habitual use by the mother, with a subsequent differentiation of other individuals into those who may be dominated in compensation for suppression of individuality by the mother. (The neutral

adult in this experiment was less specific and less intense in her control than was the average mother.)

The preceding interpretation of the general trend shown in this study is admittedly clouded by other relationships. Generalization of either submissive or dominating reaction patterns from behavior with the mother to that shown with the neutral adult was also present.

In order to determine whether testing with the mother or with the neutral adult first influenced the degree of generalization or differentiation, the *t*-test for related samples was applied to the distribution of differences between first and second sessions with the neutral adult. These results are summarized in Table 9. None of the differences was significant at or beyond the 5 per cent level of confidence.

#### D. INDIVIDUAL DIFFERENCES

Each mother presented a widely different pattern of behavior as represented by the totals for the various behavior categories. In this section the writer will present a discussion of a few selected cases which revealed interesting characteristics.

Mother "A" (see Table 10) was one of the mothers who showed a high total for the directing-interfering-criticism-lack-of-contact pattern of behavior. Although her absolute frequency in the specific forms of control was not high, a large proportion of the stimulations which she did present were of an extremely strong nature. She spent most of the two sessions in reading magazines, and her interaction with the child consisted primarily of imposing strict controls or sharply criticizing the child's behavior. Her general attitude during the two sessions was far from pleasant. Her manner toward the child seemed to express constant annoyance and irritability, and a complete indifference to the child's interests, needs, and individuality. For example, she delivered two stern lectures in one session when the child neglected to say "Yes ma'am" in response to the mother's stimulation. Anger either accompanied her attempts to direct or interfere with the child's behavior, or was readily

TABLE 10  
MOTHER-CHILD "A"  
FREQUENCY OF CATEGORIES IN FIRST AND SECOND SESSION FOR THE MOTHER, AND FOR THE CHILD WITH THE MOTHER AND WITH THE NEUTRAL ADULT

Category	Frequency for Mother	
	First Session	Second Session
<i>o</i>	247	143
<i>p</i>	0	4
<i>t</i>	2	7
<i>h</i>	2	3
<i>s</i>	1	6
<i>d</i>	5	14
<i>I</i>	13	9
<i>n</i>	18	15
<i>m</i>	0	2
<i>SS</i>	22	18
<i>R</i>	0.50	0.88

Category	Frequency for Child			
	Neutral Adult		Mother	
	First Session	Second Session	First Session	Second Session
<i>ac</i>	5	0	13	1
<i>s→</i>	0	0	0	0
<i>d→</i>	5	13	0	1
<i>t→</i>	0	8	0	0
<i>n→</i>	0	4	3	1
<i>s←</i>	0	0	0	0
<i>n←</i>	2	2	2	2
<i>SS</i>	2	12	2	2
Non-co-operation	0.46	0.47	0.94	1.00
Reluctant co-operation	0.11	0.30	0.92	1.00

apparent if immediate obedience was not forthcoming. The writer had frequently observed this mother when the child was brought to or called for at preschool, and her behavior in the experimental sessions was representative.

The child in this case was a four-year-old girl. In her response to the mother's stimulation she alternated between inhibited or reluctant acceptance and resistance that generally assumed an emotional or aggressive character. In fact, in her second session with the mother there were no instances in which she displayed "whole-hearted" co-operation. Her tendency toward resistance is highlighted by the fact that she aggressively rejected both instances of verbal praise on the part of the mother. When the mother evidenced anger in her critical or interfering behavior, the child frequently appeared

visibly to shrink and to be temporarily immobile. The few controls over the mother's behavior which the child did attempt were all delivered with strong feeling.

In the last ten minutes of the second session with the mother, the child verbally acted out a story with the dolls which contained a good many aggressive components. The mother doll's "conversation" included such remarks as, "You're a selfish, selfish girl," "You're a bad girl—you never do anything for your mother," "I'm going to whip you," "I don't care if you do cry," and "You're going to bed because you're so bad." The child doll "said" such things as, "I won't—you're ugly," and "I killed you—you're dead."<sup>6</sup> The mother silently watched this performance, but it is doubtful that it provided her with any insight into the nature of her relationship with the child. In the closing seconds of the session she delivered an aggressive direction and one strongly critical denouncement.

The child's behavior, in the writer's opinion, did not justify the anger and criticism which the mother directed to her. In the preschool the child is a rather reserved, prim, and self-righteous little individual. This latter characteristic may be an attempt on her part to compensate for the inferiority feelings which the mother's behavior may conceivably produce.

When the child was tested with the neutral adult she evidenced a relatively high incidence of directing-interfering-criticism, especially in the second session. Many of these controls were delivered with strong emphasis and reflected the same manner which the mother had employed in stimulating her. She was much less resistant in these two sessions and displayed far less inhibited and reluctant acceptance. Indications of anxiety were virtually constant in frequency<sup>7</sup> in all four sessions.

This child's relationship with her mother seems to be compounded of simultaneous tendencies toward inhibited submission and attempts to assert herself through the medium of aggressive resistance. It seems reasonable to assume, in this case, that the mother's harsh censure, dictatorial control, and attitudes of rejection have contributed heavily to the child's behavior. The child's behavior with the neutral adult suggests that she has assimilated the patterns of stimulation used by the mother and is now employing them as compensatory techniques for controlling the behavior of a person from whom she is less likely to receive recriminations. This is a good example of a child's differentiation of the stimulus properties of the various individuals with whom he comes in contact. Al-

<sup>6</sup>These remarks were recorded in shorthand at the time of their occurrence.

TABLE 11  
MOTHER-CHILD "B"  
FREQUENCY OF CATEGORIES IN FIRST AND SECOND SESSION FOR THE MOTHER, AND FOR THE CHILD WITH THE MOTHER AND WITH THE NEUTRAL ADULT

Category	Frequency for Mother	
	First Session	Second Session
<i>o</i>	111	56
<i>p</i>	0	0
<i>i</i>	2	9
<i>h</i>	4	0
<i>s</i>	4	19
<i>d</i>	1	14
<i>I</i>	4	3
<i>n</i>	2	0
<i>m</i>	3	5
<i>S<sub>1</sub></i>	7	3
<i>SS</i>	0	0
<i>+1</i>	7	2
<i>-</i>		
<i>R</i>	0.21	0.23

Category	Frequency for Child			
	Neutral Adult		Mother	
	First Session	Second Session	First Session	Second Session
<i>ac</i>	3	3	10	3
<i>s→</i>	0	0	0	0
<i>d→</i>	9	17	9	15
<i>i→</i>	0	4	0	2
<i>n→</i>	3	0	3	1
<i>s←</i>	0	0	0	0
<i>n←</i>	0	0	1	0
<i>SS</i>	8	4	10	4
Non-co-operation	0.61	0.43	0.92	0.53
Reluctant co-operation	0.14	0.08	0.50	0.38

though the incidence of both non-co-operation and inhibited and reluctant acceptance was considerably lower in response to the neutral adult, both types of behavior showed some tendency to increase toward the level exhibited with the mother as the neutral adult became a more familiar person to the child.

Mother-child "B" (see Table 11) presented a different pattern of interaction. This mother's behavior was characterized by timidity, constraint, and lack of self-confidence. She was one of the few mothers whose attempts to influence the child's behavior were delivered in a manner suggesting doubt that compliance would be forthcoming. (This type of stimulation was given a rating of 1; the frequency of its occurrence for

this mother appears in Table 11 under *S<sub>1</sub>*.) She was also the only mother who reacted to the child's stimulation with an inhibited acceptance (+1). Her behavior suggested a definite eagerness to participate in the child's activities and to do and say the right thing. The realization of this desire, however, was impeded by her uncertainty and an apparent fear of rebuff from the child. Her lack of contact with the child was conditioned more by the behavior of the child than by any preference on her part. She watched the child, rather than read, and seemed to welcome any social contact which the child proffered.

The child was a lively, assertive girl of four years, who exercised rather complete domination over her mother. She was resourceful and entirely independent in her play activities, and seemed to use the mother either as a listening post for her volubility or as a medium for the application of control. In one instance the mother started to join the child in her play at the water tank. The child firmly stated, "No, I don't want you to—go away," and the mother silently and meekly crept back to her chair on the other side of the room. Whenever the mother made a weak attempt to control the child's behavior, the child usually ignored her or remonstrated with an aggressiveness far out of proportion to the strength and content of the stimulation. In such cases, the mother customarily withdrew and failed to press the point.

This child has presumably learned to utilize her mother's lack of assurance, nonspecificity of control, and failure to follow through on demands as a means for seizing the reins of power in her own hands. Experience has taught her that an aggressive refusal is usually sufficient to cut off unwanted stimulation, and that a firmly expressed stimulation on her part is customarily rewarding.

Her relationship with the neutral adult showed a rather direct transference of the same behavior evidenced with the mother. She was about equal in her tendency to control the situation, and in the frequency of strong and aggressive stimulations. She did display, however, somewhat less non-co-operation and less reluctant acceptance with the neutral adult.

The assertiveness, independence, and negativism which characterize this child's behavior may cloak an inner insecurity. The traits of domination which she has been allowed to develop may conflict with a distinct need for direction and guidance. In other words, her ability to control her own and her mother's behavior may encourage feelings of self-esteem while at the same time force upon her the solution of problems that are beyond her capacities. It would be particularly revealing, in this case, to know what role the father plays in the family relationships.



It is interesting to note that the only other mother in this study who evidenced, to any extent, a lack of confidence in her ability to handle the child was the recipient of an extreme amount of directive control, and a relatively high frequency of negative responses and strong stimulations.

Table 12 presents a numerical description of the relationship existing between mother-child "C." This mother's behavior at both sessions was typified by a genuine interest in and enjoyment of her child as an individual in his own right. Her manner was calm and poised and at the same time warmly responsive. She spent a large share of the periods in playing with the child, following his leads for the actual structure of the play experience and entering enthusiastically into the imaginative spirit of the theme. She imposed very few controls on the child's behavior; those which she felt were necessary were delivered quietly and usually by indirect methods.

The child was a happy, spirited boy of three who was very active and creative in his play. He apparently regarded his mother as a fine companion and thoroughly enjoyed her presence. He planned his play to include her in a special dinner party, a trip to the movies, and a train excursion which encompassed a variety of imagined experiences. His directions for her behavior were mainly within the framework of the play situation, and he frequently expressed what he wanted in terms of a suggestion rather than a demand. He usually accepted his mother's stimulations; whenever he disagreed, his non-acceptance was matter-of-fact and was often accompanied by a reason for his rejection. The behavior of this child reflects directly both the stimulus and the response aspects of the mother's behavior toward him. Their relationship, as exhibited in the experimental sessions, seemed to represent a nicely balanced interaction. Knowing the child as an active and "regular" boy, it would be fallacious to assume as constantly smooth a relationship as the experimental situation produced. The data for these sessions do, however, undoubtedly reveal the main tenor of the interaction between this mother and child.

The child's behavior with the neutral adult did not follow the general trends which appeared when the results for all the children were considered. He showed less directive behavior, and slightly more non-co-operation and reluctant acceptance of stimulations with the neutral adult than he did with his mother. Since an increase in directing was found to be positively related to high specificity of control in the mother, the absence of the tendency in this case, wherein maternal control was at a minimum, may constitute a slight substantiation for the theory ex-

TABLE 12  
MOTHER-CHILD "C"  
FREQUENCY OF CATEGORIES IN FIRST AND SECOND SESSION FOR THE MOTHER, AND FOR THE CHILD WITH THE MOTHER AND WITH THE NEUTRAL ADULT

Category	Frequency for Mother	
	First Session	Second Session
<i>o</i>	0	4
<i>p</i>	42	34
<i>t</i>	3	22
<i>h</i>	5	4
<i>s</i>	19	14
<i>d</i>	2	1
<i>I</i>	9	7
<i>n</i>	1	1
<i>m</i>	2	6
<i>SS</i>	0	0
<i>R</i>	0.04	0.24

Category	Frequency for Child			
	Mother		Neutral Adult	
	First Session	Second Session	First Session	Second Session
<i>ac</i>	4	7	1	6
<i>s</i> →	3	5	1	6
<i>d</i> →	11	7	5	2
<i>i</i> →	0	0	0	0
<i>n</i> →	0	0	0	0
<i>s</i> ←	1	0	0	0
<i>n</i> ←	1	2	0	0
<i>SS</i>	0	3	0	1
Non-co-operation	0.20	0.22	0.23	0.31
Reluctant co-operation	0.06	0.06	0.0	0.07

plaining the trend toward an increase. On the whole, the child showed very little difference in behavior toward the mother and the neutral adult, which may be indicative of a fairly stable and well-adjusted pattern of social behavior developed in response to, and in imitation of, the mother's behavior.

The discussion of these three cases in some detail serves to highlight the setting of the experiment by providing a picture of the actual behavior occurring in the sessions more clearly than that given by statistical analysis of the data alone. It also illustrates the wide varia-

bility of mother and child behavior which this method of investigation is able to reveal, and indicates briefly the nature of some of the other relationships which existed in individual cases but which were obscured in the results based on

the entire sample. These characteristics would appear to make the method valuable in supplementing data obtained by other means, with reference both to analysis of group tendencies and to an understanding of individual cases.

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## CHAPTER IV

### DISCUSSION

THIS study has presented a method for investigating the mother-child relationship under experimental conditions. There are both advantages and disadvantages in this particular approach to the problem of reliable measurement of interactive behavior. One advantage is that the technique tends to minimize the awareness of the mother that her behavior is under observation. To what extent it is actually successful in evoking customary behavior on the part of the mother has not been determined. The method also allows the experimenter to observe the behavior of the mother and the child under controlled conditions and without the disrupting factors to which observations in the home are subject. In addition, the method of recording not only provides a detailed running record of all ongoing behavior sequences, but also supplies data which are amenable to statistical analysis.

The most important source of error in the method lies in the possible discrepancy between the observed sample of the mother-child relationship and the true relationship. Any one of several factors may operate to distort more habitual behavior. Another problem inherent in the method is the difficulty in accurately interpreting the meaning of behavior as it appears to the individuals involved. Both disadvantages, however, are characteristic, to a greater or lesser degree, of other methods of investigation.

The method would appear to have certain values. With further revision and refinement of the behavior categories, it can probably be best utilized as an additional source of data on the mother-child

relationship in conjunction with other methods of investigation. An interesting problem for subsequent research would be a determination of the reliability of the method by comparing the sample of mother-child interaction obtained under experimental conditions with that secured by extensive observations in the home.

Analysis of the data obtained in this study was based on stimulus-response learning theory. Such an approach assumes that the various types of stimulation and response which a mother employs with her child are helping to determine the particular modes of behavior which are being incorporated into the child's personality.

The mother of the young child is typically oriented toward developing certain types of behavior in the child which are compatible with her own set of standards. In her attempts to guide the child's present or future behavior she can use any of a variety of methods, depending on her own personality and/or the reward effects of previously tried methods which have proved successful. She can offer rewards, incentives, or punishments; she can facilitate or inhibit certain activities; and she can influence behavior by direct or indirect means. These three general ways of classifying her behavior overlap, and each is subject to further categorization. For example, if the mother wishes to stop a specific act, she may present a direct interference, she may provide the stimulus for an alternative response, she may punish the unwanted activity or reward the substituted behavior, she may arrange environmental conditions to obstruct the behavior, she may offer incentives to change the child's motivation, and so on.

The child learns to react in certain ways to these various forms of stimulation. The mother's behavior provides stimulus cues which are generalized from previous situations to the present and thus serve to call forth a similar response. In addition, the types of stimulation which are employed by the mother present the child with

a model for his own behavior in controlling individuals. Through the mother's response to these stimulus aspects of his behavior he is also learning which techniques are most successful in goal-attainment.

The child, then, is developing patterns of behavior both as an individual response to the particular behavior which the mother evidences in her relationships with him and as a direct incorporation of certain aspects of her behavior. When the child is placed in a social situation with another adult, his behavior is largely determined through the operation of generalization and differentiation. The stimulus cues which this individual presents to him may provide a contextual similarity to the mother's behavior which allows for generalization on the part of the child and a resultant approximation of behavior evidenced with the mother. On the other hand, the contrasting stimulus properties of this new individual's behavior may promote differentiation and so lead to altered behavior in the child. Obviously, both factors may be at work in the child's relationship with the person other than the mother.

The results obtained in this study provide some experimental verification of the theoretical assumptions. Correlations were discovered both between stimulus-stimulus and response-response aspects of mother-child behavior, and between stimulus and response characteristics. The children appeared to reflect directly in their own behavior the mother's degree of specificity of control and the type of response she customarily made to their stimulation.

Mothers who evidenced a high specificity of control toward the child, either in the form of directing-interfering-criticism behavior or in the frequency of strong stimulations, tended to receive more non-co-operation and more inhibited and reluctant acceptance of their stimulation. The child has a choice of three types of behavior in response to a mother who attempts to control his activity: willing acceptance of control, negativism and resistance, or a spurious conformity. If the latter type of behavior becomes habitual, the child may develop veiled resistance or submissiveness, both of which may lead to undesirable personality characteristics. If the child chooses to behave negativistically, he may be successful in establishing behavioral autonomy, or his negativism may become so pronounced as to influence disadvantageously many of his adjustments in the social milieu. This

analysis does not imply that a mother's directive control of instrumental acts is not a desirable and necessary procedure; a child needs the security of having certain aspects of his behavior closely defined and limited in the interests of personal welfare and while he is in the process of learning socially acceptable ways of behaving. It does suggest, however, that excessive use of controls, although in many instances evoking the immediately desired behavior from the child, may militate against the best possible adjustment of the child. A mother who relies on the less imposing techniques of suggesting and structuring for influencing child behavior, except where explicit control is necessary, is encouraging him to develop habits of self-sufficiency and independent thinking and is minimizing the necessity for arbitrary control which tends to provoke resistance in the child. Excessive use of this less forcing form of control, however, may constitute as direct an impingement on the child's free sphere of activity as the more directive and coercive types, and it may also relegate more responsibility to the child for making decisions than he is developmentally able to cope with.

The fact that the category *out of contact* showed a positive relationship with a reasonably high degree of specific control by the mother indicates a tendency on the part of some mothers to be indifferent to the child's interests and activities until they consider that definite control is required. In other words, their interaction with the child is based primarily on a desire to impose directly their standards for his behavior, and the child is otherwise left to develop without guidance. Here again, mere lack of contact with the child cannot necessarily be considered deleterious in effect. The child certainly needs opportunities for independent activity without the influence of adult guidance. On the other hand, when the mother's behavior suggests an unconcern toward the child except as an instrument for adult manipulation, then certain reactions may be postulated in the behavior of the child. The children of the mothers who rated high in these two forms of behavior were apparently more directive in their control, more aggressive in their stimulations and responses, and more non-co-operative in general. The relatively high correlations obtained in these instances would suggest that such a behavior pattern in the mother was being reflected by these indications of a comparatively unsatisfactory mother-child relationship. If the mother's indifference to the child, as exhibited under these experimental conditions, may be considered a mild form of rejection, then the child's behavior would seem to express to some extent the aggression that other investigators have found to be related to maternal rejection.



The foregoing analyses, while showing that there is some tendency for certain types of behavior to be coexistent in mother and child, do not assume that the nature of the cause-effect relationship is known. It appears likely that "circular causation" is prominent in the area of interpersonal relationships owing to the intricate reciprocal and pyramiding effects of the behavior of two individuals. This point is particularly applicable in evaluating the positive relationship found in this study between negative responses by the mother and strong and aggressive stimulations by the child, and between negativism on the part of the child and a high proportion of strong stimulations by the mother. In the first case, the mother may be non-co-operative owing to the unreasonableness and emotionality of the child's demands, or the child's attempts at strong control and resistance may represent an aggressive reaction to the mother's nonacceptance of his stimulation. Both factors are undoubtedly operative. Similarly, the child may be negativistic in rebellion against the mother's excessive use of controls, or the mother may find it necessary to be highly directive and firm toward the child in order to control effectively the behavior of an aggressive and resistant child.

When the child's behavior with the neutral adult was compared to that evidenced with the mother, indications of both generalization and differentiation were found. The children tended to show a consistency of behavior with respect to suggesting, bids for help, and indications of anxiety. In the case of strong and aggressive stimulations, non-co-operation, and reluctant and inhibited acceptance, however, they evidenced generalization on a three-point gradient from the first session to the second session with the neutral adult to the average of both sessions with the mother. The variable that was ap-

parently operating in this progressive change was familiarity with the neutral adult. The gradual increase in frequency of these forms of behavior apparently reflected a lessening of social inhibitions and more expression of independence. This general trend would naturally obscure some of the individual cases in which consistency of behavior or a differential response characterized the relationship with the neutral adult.

The collective trend toward differentiation in the case of directing-interfering-criticism and asking permission appeared to be dependent on the behavior of the mother. The decrease in asking permission with the neutral adult was positively correlated with the frequency of high specificity of control on the part of the mother. These children were apparently differentiating the stimulus behavior of the neutral adult as less restrictive, and, therefore, requiring less definition of activity limits. The increase in  $d + i + n$ , on the other hand, showed a positive relationship to noncontact, specific control, and strong stimulations on the part of the mother. The factor of decreased social inhibition with greater familiarity is probably operating in this instance. In addition, the correlations with maternal behavior suggest several interpretations: the increase in attempts to control the neutral adult's behavior may represent a desire to compensate for excessive control exercised by the mother, it may be an expression of aggression, and/or it may be only an eagerness for contact stemming from the mother's indifference to the child's activities.

The results which this study has yielded point to the intimate interdependence of mother and child behavior, and to significant relations between the behavior of the child with his mother and the behavior of the child with other individuals in his environment. The relationships which have been discussed in this chapter represent only a few of the wide variety that exist. Further systematic formulation of these relationships, together with experimental investigations of their effects on behavior, will greatly facilitate the development of a concrete body of knowledge in the fields of personality and social behavior.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

**A**N EXPERIMENT was designed to investigate factors in the interactive relationship between mother and child which might bear on the behavior and social learning of the child. Subjects for the study were 34 mothers and their respective children (17 boys and 17 girls) who attended the Preschool Laboratories of the Iowa Child Welfare Research Station. Ages of the children ranged from 3 years 4 months to 5 years 7 months. Each mother and child was observed for two half-hour sessions on different days in an experimental room which made available an assortment of play equipment for the child and magazines for the mother. The experimenter observed the session from an observation booth fitted with a one-way screen and recorded the behavior of both mother and child every five seconds in terms of a notational system based on a variety of behavior categories. The mothers were told that the purpose of the study was to investigate play behavior of children when adults are present, and that they were free to do as they wished during the period.

In order to investigate generalization of child behavior from that evidenced with the mother to that shown in social situations with other adults, each child was also tested for two 30-minute sessions, under the same experimental conditions, with a young woman who was socially unfamiliar to him and who has been termed the "neutral adult." The neutral adult was given a frequency range of the main behavior categories within which her behavior toward all the children should fall. Statistical analysis showed that her behavior in all 68 sessions, although somewhat variable, approached as satisfactory a degree of consistency as

could be expected in a free-play, interactive situation. A subjective evaluation of her behavior would indicate that qualitatively her manner, attitude, and social responsiveness were constant from child to child.

In order to offset any factors associated with the order in which the child was tested with the adults, the 34 children were divided into two groups matched for age and sex. For one group of children the order of testing was two sessions with the mother, two sessions with the neutral adult; for the other group the order was reversed.

The categories which referred to the behavior of adults included 11 main types: lack of contact, interactive play, teaching, helping, praising, structurizing, directing, interfering, criticizing, co-operation, and non-co-operation. The last six categories were supplemented by numerical ratings expressing the qualitative nature of the behavior evidenced. The following are the categories descriptive of child behavior: bid for attention, bid for physical proximity, directing, interfering, criticizing, indications of anxiety, co-operation, non-co-operation, bid for praise, affection, asking for information, asking for permission, and asking for help. The first eight of these categories were also supplemented by qualitative ratings.

Statistical analysis showed that the mothers evidenced consistent behavior from the first to the second session. The children's behavior was also consistent from the first to the second session with the mother.

Positive correlations indicated that the children reflected directly in their own behavior the mother's use of directing-

interfering-criticism, strong stimulation, and suggesting types of control, and also the tendency toward nonacceptance of stimulations.

A high degree of specificity of control, represented by high proportions of directing-interfering-criticism and strong stimulations in the behavior of the mother, showed positive relationships of from .45 to .71 with measures of non-co-operation and of inhibited and reluctant co-operation on the part of the child. Directing-interfering-criticism together with lack of contact from the mother yielded positive  $r$ 's from .42 to .62 with non-co-operation, with inhibited and reluctant co-operation, with a tendency toward high specificity of control, and with strong and aggressive stimulations and refusals by the child. Positive coefficients of the order of .6 were obtained between the mother's nonacceptance and the child's tendency to give strong and aggressive stimulations and refusals; strong and emotionally toned stimulations by the mother showed positive relationships of from .52 to .71 to negativism and to inhibited and reluctant co-operation on the part of the child.

Correlations ranging from +.43 to +.63 between categories of mother behavior indicated that the mothers who tended to remain out of contact with the child also tended to be more highly specific in their control and more unwilling to accept stimulations when interaction was in progress. Correlations of +.34 to +.44 between categories of child behavior suggested that the children who tended toward high specificity of control also tended to be more negativistic.

Analysis of the child's behavior from the first to the second session with the neutral adult yielded some significant differences. Evidence for generalization of the stimulus properties of the neutral adult from those of the mother was

found in the case of the following child behavior categories: strong and aggressive stimulations, inhibited and reluctant co-operation, and non-co-operation. The direction of the change was a progressive increase from first to second session with the neutral adult to the average of the two sessions with the mother. In other words, as the child became more familiar with the neutral adult his behavior approached that displayed toward the mother. The children showed a trend toward differentiation of the stimulus properties of the neutral adult, as compared to the mother, in two types of behavior: asking permission, and directing-interfering-criticism. A decrease in asking permission occurred from the first to the second session with the neutral adult, which showed a correlation of +.41 with a tendency to give a high proportion of strong stimulations on the part of the mother. There was a significant increase in directing-interfering-criticism by the child from the first to the second session with the neutral adult which significantly exceeded in frequency that exhibited in the presence of the mother. This increase yielded positive correlations of from .33 to .42 with directing-interfering-criticism, strong stimulation, and lack-of-contact behavior patterns in the mother.

The order of testing with the adults did not affect these trends.

This study has presented a method for measuring the mother-child relationship under experimental conditions. It has also shown in broad outline some of the relationships which exist between mother and child behavior, viewed in terms of stimulus-response learning theory. Further research is needed to investigate these relationships in more detail and to discover other critical factors in this interactive relationship which are essential to the systematic understanding of personality development.

# APPENDIX

## SAMPLE OF THE SCORING SHEET (REDUCED SIZE) USED IN RECORDING THE BEHAVIOR OF THE ADULTS AND THE CHILD

NAME	1	2	3	4
DATE	5	6	7	8
Hour	9	10	11	12
Age	13	14	15	16
GROUP	17	18	19	20
SESSION	21	22	23	24
	25	26	27	28
	29	30		

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